National Institute of Environmental Health Sciences

Urban form and extreme heat events: Are sprawling cities more vulnerable to climate change than compact cities?

Author(s): Stone B, Hess JJ, Frumkin H
Year: 2010
Journal: Environmental Health Perspectives. 118 (10): 1425-1428

Abstract:

BACKGROUND: Extreme heat events (EHEs) are increasing in frequency in large U.S. cities and are responsible for a greater annual number of climate-related fatalities, on average, than any other form of extreme weather. In addition, low-density, sprawling patterns of urban development have been associated with enhanced surface temperatures in urbanized areas. OBJECTIVES: In this study. we examined the association between urban form at the level of the metropolitan region and the frequency of EHEs over a five-decade period. METHODS: We employed a widely published sprawl index to measure the association between urban form in 2000 and the mean annual rate of change in EHEs between 1956 and 2005. RESULTS: We found that the rate of increase in the annual number of EHEs between 1956 and 2005 in the most sprawling metropolitan regions was more than double the rate of increase observed in the most compact metropolitan regions. CONCLUSIONS: The design and management of land use in metropolitan regions may offer an important tool for adapting to the heat-related health effects associated with ongoing climate change.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2957923

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

United States

Health Co-Benefit/Co–Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Intervention: ☑

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Research Article

Resilience: ☑

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content